INTERNATIONAL STOCK MARKET LINKAGE: EVIDENCE FROM INDIA

For the registration of the degree of
Doctor of Philosophy

IN THE FACULTY OF COMMERCE AND MANAGEMENT
TO

THE IIS UNIVERSITY, JAIPUR

Submitted by:
Ms. Osheen Modi
ICG/2017/24596

Under the supervision of:
Dr. Roopam Kothari
ASSOCIATE PROFESSOR & HOD
Dept. of HRM & IB

DEPTARTMENT OF MANAGEMENT
2018

S.No.	Particulars	Page No.
1.	Introduction	1-4
2.	Review of Literature	5-24

3.	Research Gap	25
4.	Motivation of Study	25
5.	Theoretical Framework	
	Research Questions	26
	Research Objectives	26
	Hypothesis	26
7	Research methodology	27-28
	Research Design	
	Sampling design	
	Data collection	
	Methodology	
8.	Proposed Scheme of Chaptalization	29
9.	References	30-34
10.	Appendices	35-56

INTRODUCTION

Concept of Financial Market Interlinkage

Interlinkage of financial markets is process in which markets get combined leading to conjunction of risk adjusted returns of assets with similar maturity across the markets happen . Interlinkage facilitate participants in markets from different countries have uninterrupted access to markets .There has been development of trend of growth in interlinkage among markets of countries due to globalization and deregulating initiatives undertaken by countries and also due to advancement in available technologies .

Regulating authorities and central banks have taken various measures after 1990 to address issues regarding interlinkage of financial markets . Also the initiatives have been taken by emerging market economies to deregulate and eliminate limits on financial asset pricing which is one of the major requirements to interlinkage of financial markets.

Central banks and regulatory authorities have taken various measures post 1990s to address the issue of integration of financial markets . Emerging Market Economies have also taken various de regulation measures leading to eliminate of restriction on financial asset pricing , one of the pre requisite of integration of financial markets. Opportunity to take advantage by arbitration has significantly gone down because of advancement in communication means electronification of payment systems leading to quicker and easier transfer of information and funds .

Significance of financial market interlinkages

Interlinkage among financial markets are significant for following reasons :

- Interlinked markets work as source to transmit important price signals
- Efficient and interlinked markets form an important means for economic growth by promoting saving and investments in domestic markets
- Interlinkage of financial market is important criteria to emerge as financial centre at regional or international level.
- Financial stability increases as interlinkage in financial markets helps in increasing competion and efficiency of intermediaries involved .

Interlinkage of Indian financial markets

Within domestic market , market linkage has been done through strengthening of coemption, increasing depth of financial markets using innovative instruments , ease down the restrictions on transaction flows, reducing transaction cost and liquidity enhancement .

Indian financial markets have increasingly got integrated with global financial markets due to gradual and regulated capita account liberalization in keeping up with underlying macro economic development, the level of preparedness of the domestic financial system and the international financial market dynamics.

Various segments of Indian financial markets have been integrated to bring transformational change in structure of Indian markets, to reduce arbitrage opportunities, in order to achieve higher level of operational efficiency of intermediaries operating in markets and increase operating efficiency of monetary policy in

economy. The basic emphasis of monetary policy has been to efficiently allocate funds in the financial sector and bring uniformity in the price of different financial products through higher level of linkage among financial markets .

Dimensions of financial market interlinkage

Integration of financial markets occur at three dimensional levels national ,regional, global . Also financial integration could be categorized at horizontal and vertical level . At the horizontal interlinkage arises among the segments of domestic financial market , while in case of vertical market interlinkage occurs between domestic and international financial markets .

- **Domestic financial market interlinkage** Under this form of diversification financial markets of domestic market are interlinked ,it involves portfolio diversification by savers , investors and intermediaries . Under horizontal diversification the interest rate revolves around basic reference rate , defined as price of a short term low -risk financial investment in liquid and competitive market . It helps in providing the basic liquidity for the financial system and also serves as a means for central banks to gauge the tightening of monetary policy . This form of integration may be at higher level because the participants work closely in different segments of markets .
-
- **Global interlinkage** Under this system the domestic markets of a country opens up for flow of capital and financial services across the borders by eliminating barriers to free flow of capital and financial service by removing barriers like tax burden and capital control measures .Global integration is promoted by synchronizing of national standards and laws either through commonly agreed standards or recognized standards

- **Regional financial interlinkage :** It happens at regional level due to ties between countries at regional level It is easier to achieve and manage due to thought process of market makers to engage in markets of particular centers and network externalities .Regional financial integration can prove to be important means of developing local financial markets , for example by peer pressure to strengthen institutions and upgrade local practices

Measures of financial interlinkages :

The progress of domestic, global and regional financial integration could be measured using a number of approaches. Generally, these measures are of three categories: institutional/regulatory measures, quantity and price based measures.

- **Institutional/Regulatory Measure**: This measure involves using restrictions based upon law on trade and flow of capital across borders of countries . However there are some limitations to this system they may not be binding ,or they might not be appreciated because the capital flows may remain unaffected Some practical aspect of interlinkage may remain uncovered .
- **Price-related measures :** Most commonly used measure based on price to gauge price equalization and market convergence of market include cross-market spreads, correlation among various interest rates, and transmission of volatility also uncovered and covered parity of interest , also correlation of price of assets between countries

  . However there are some major problems related with this measure especially in case of emerging markets . This may happen because price may move because of similarity in macro economic fundamentals and not due to market interlinkage Also price could be affected by difference in credit , currency and financial risk , suggesting differentiated moment in price even if there is significant level of financial market interlinkages .

- **Quantitative measure** : Turnover and liquidity indicators data are used for measuring interlinkage among segments of domestic financial market segments .Capital flows is used to measure interlinkage among global financial markets

Benefits and Costs of Financial Market Interlinkage :

Benefits

- **Smoothening of Consumption** : If markets are interlinked countries linked might allow a country to participate in risk sharing and smoothing of consumption by helping a country to borrow more in adverse times (for example during a slump or a steep downfall in trade level of countries) and lend during the time of boom in marekt (during time of growth or enhancement in terms of trade , this helps in increasing welfare of consumers .
- **Growth and Investments in Domestic Markets** : Interlinkages promote flow of resources across the border , the financial openness leads to cause an effect on domestic investment and growth .In developing nations investments get limited due to limited income level of people . For the time period until when cost of borrowed (capital) is equal to marginal returns from investments , the net foreign resources can support the saving in domestic market , increase flow of physical capital per worker and helps in increasing rate of economic growth of country and improving their living standard ..
- **Macroeconomic discipline is enhanced**: As a reward for good policies and penalties for bad policy , free flow of capital may cause a pressure on countries to follow a disciplined macro economic policy and reducing policy mistakes . A disciplined policy supports the stability of macroeconomic stability, which may also lead to higher economic growth ..
- **Increased financial stability and efficiency of banking system** : It may increase the depth and breadth of financial markets , if restrictions on international flow of capital are reduced than FDI can also cause a direct effect on growth of the country linked . With increased level , quantum of regular flow of funds increase the size of markets and ultimately leading to growth of markets and countries .

Potential Costs

This includes high level of concentration in flow of capital and limited access for small countries in need of finance either for ever or during the time when they need the most; an insufficient allocation of flows in domestic market ,which might adversely affect their growth

- **Capital flows remain concentrated and access get limited** : It was finding of various studies in past that the concentration of capital flows has been limited to a small number of recipient countries , so no matter how open the capital of countries , they remain left out from the list of investing nations.
- **Misallocation of Capital in Domestic Market :** The capital inflows if misallocated into low return investments or bad investments or speculative non profiting investments then their benefit in long run may be limited . Low level of productivity in investment in the non-tradable sector might with time decrease capacity of economy to export .In countries with poor supervision of financial systems and weak banks , the direct or indirect infusion of large amount of funds by banking system may increase the chances of problems related with deposit insurance
- **Loss of macroeconomic stability:** Due to openness of financial markets , large amount of funds get infused leading to adverse effect on macroeconomic situation including rapid monetary expansion , inflationary pressure ,pressure on real exchange rate and increased level of current account deficit .Flexible exchange rate system along with growth in external deficit invites situations of currency depreciation . And in regime of fixed exchange , losses in level of competitiveness and growth level

of external imbalance may erode the trust in reliability and sustainability of the peg , leading to crisis situation in participating currency and increased financial instability

.

REVIEW OF LITERATURE

Concept of Systematic reviews :The objective of systematic review is to systematically evaluate and integrate findings of all relevant and good quality individual studies addressing one or more research questions .

Systematic Literature Review has been made . Review process for understanding the issues and determine further avenues in Global Financial Market integration is categorized following phases

Step 1 Article Selection

Step 2 Classification and description of Literature

Step 3 Detailed Content and analysis of articles

Step 4 Reporting of findings and research gaps

Literature Collection and selection

Based on search made on search engine google scholar to collect comprehensive range of articles for review. Based on key word search, a large number of literature was found. Because it was not possible to review all the papers, Papers were collected for a period of thirty years from 1987 to 2017. Papers based upon measuring level of stock market integration, volatility and returns, integration under bull and bear phase, papers studying integration of Indian stock markets, factors affecting stock market integration, Flow of FDI and FII in integrated markets have been covered under review.Keyword "Integration of financial Markets " was used . Based on it large number of papers were found. Based on different processing steps identification of papers which deal with the topic of financial market integration total 100 papers were identified. After further readings total 77 papers were selected for the review. Summary of systematic process of articles selection is given in table :

Source	Based on	month of search	Number of papers
Elsevier	**Abstract**	**December 2017and January 2018**	**27**
JSTOR	**Abstract**	**December 2017and January 2018**	**13**
Proquest	**Abstract**	**December 2017and January 2018**	**4**
Springer	**Abstract**	**December 2017and January 2018**	**1**
research gate	**Abstract**	**December 2017and January 2018**	**2**
Wiley Online Library	**Abstract**	**December 2017and January 2018**	**5**
Mpra	**Abstract**	**December 2017and January 2018**	**3**
other sources (includes open source , institutional websites , publishers website)	**Abstract**	**December 2017and January 2018**	**21**
source not known	**Abstract**	**December 2017and January 2018**	**1**

Papers have been searched and source through search engine google scholar . The Source of Database were also identified based upon results of google scholar . . Sources include data base like elsivere and JSTORE , proquest , springer open sources like sage journals, Dergipark ; Instittional Websites like NSE , Eastern Mediterranean University Institutional Repository (EMU I-REP etc.

2)Description and classification of Literature

Seventy Seven articles identified through systematic Literature review are analysed based upon year of publication , methodology used , journal of publication , citation index . It is done to understand trend and issues in the literature of Financial Market integration .

2.1) Analysis by year of Publication

Year	number of Papers
1987	1
1990	1
1992	1
1993	2
1995	2
1997	1
1998	1
1999	1
2000	1
2001	2
2003	5
2004	2
2005	1

Year	Number of Papers
2006	4
2007	2
2008	2
2009	7
2010	4
2011	6
2012	4
2013	5
2014	9
2015	6
2016	5
2017	2

Papers are sourced for period from year 1987 to 2017.The analysis of year pf publication suggests that there has been frequent publication since 2009. The possible reason may be the sub Prime crisis in US and its impact on global economies.

2.2)Analysis by research method and setting

Research Method	Number
Conceptual	3
Empirical	74

There are two methodologies used in papers being reviewed. Maximum number of papers are based on Empirical Analysis using Time series analysis , correlation , Vector auto regression and other modelling methods . On the other hand only 3 papers out of 77 papers are conceptual in nature .

2.3) Analysis by research journal of publication

S.no	Journal	Number of Papers
1	Chinese Business Review,	1
2	Emerging Markets Finance and Trade,	1
3	IMF staff papers	1
4	International Journal of Business and Management	1
5	Journal of Banking & Finance	1
6	Journal of Empirical Finance	1
7	Journal of Financial Economics	1
8	Journal of Money, Credit and Banking	1
9	Review of International Economics,	1
10	The Review of Financial Studies,	1
11	The World Bank Economic Review	1
12	. Journal of Political economy	1
13	Applied Financial Economics	1
14	Asian Economic and Finaical Review	1
15	Asian Journal of Finance & Accounting	1
16	Economic and Political Weekly	1
17	Economic Systems	1
18	Energy Economics	1
19	Estudios de Economía	1
20	Finance research letters	1
21	Financial Management	1
22	International Business Review	1
23	International Journal of Arts and Commerce	1
24	International Journal of Economics	1
25	International Journal of Economics and Financial Issues	2
26	International Journal of Enterprise Computing and Business System	1
27	International Journal of Finance & Economics	1

28	International Journal of Financial Studies	1
29	International Review of economics and finance	3
30	International Review of Financial Analysis	2
31	Journal of Applied Business Research	1
32	Journal of Banking & Finance,	2
33	Journal of Commerce and Accounting and Research	1
34	Journal of Contemporary Research in Management	1
35	Journal of Economic Behavior & Organization,	1
36	Journal of Economic Integration	1
37	Journal of emerging Market Finance	1
38	Journal of Empirical Finance	2
39	Journal of financial Economics,	2
40	Journal of International Money and Finance	2
41	Journal of International Economics	2
42	Journal of **International** Financial Markets	1
43	MPRA papers	3
44	National University of Singapore (Working Paper)	1
45	NSE Research Paper	2
46	Journal of applied corporate finance	1
47	Pacefic Basin Journal	1
48	PD Wooldridge	1
49	Procedia Economics and Finance	1
50	Research in international Business and Finance	1
51	Review of Market Integration	1
52	The Economic Journal, 2009	1
53	The Journal of Business	1
54	The Journal of Finance	2
55	The Review of Economics and Statistics	1
56	The Review of Financial Studies	1
57	The World Economy	1
58	world politics	1
59	Source not known	6

In total 58 journals contained the selected publications . Journal of 6 papers remained unknown . Journal of Empirical Finance , International Review of economics and finance , International Journal of Economics and Financial Issues , International Review of economics and finance , International Review of Financial Analysis , Journal of Banking & Finance, Journal of emerging Market Finance , Journal of International Money and Finance , Journal of International Economics , MPRA papers , NSE Research Paper , The Journal of Finance are jornals from which more than 1 papers have been sourced .

2.4) Analysis by methodology used

Methodology	Total Number of Papers
Correlation	17
factor modelling	2
general equilibrium model	2
multiple methods	2
Others	9
regime switching model	3
Regression	11
Time Series Analysis	20
Vector Auto Regression	8
conceptual paper	3
Total	77

Based on analysis of methodologies used in researchers it was identified that researches have majorly used time series analysis , regression correlation and vector auto regression mostly . Others include the methods like a two-market HAM model , Diebold and Yilmaz methodological approach.

2.5) Citation Analysis

- Citation means that someone else has referenced work of other authors . Citation analysis means studying cited references articles to find most significant work in selected field of research . French, Schwert, Stambaugh (1987) has been cited highest number of times , Bekaert, Harvey (1995) , Hamao, Masulis (1990), Alfaro, Chanda, et al (2004) , Bekaert, Harvey (1997) . Out of all the selected papers

Sno	Paper title	Citation index
1	Expected stock returns and volatility	4240
2	Time-varying world market integration	2531
3	Correlations in price changes and volatility across international stock markets	2314
4	FDI and economic growth: the role of local financial markets	2137
5	Emerging equity market volatility	1945
6	Dilemma not trilemma: the global financial cycle and monetary policy independence	798
7	*International stock market linkages: Evidence from the pre-and post-October 1987 period*	784
8	financial integration , financial development and global imbalance	780
9	Long-term global market correlations	688
10	Measuring financial asset return and volatility spillovers, with application to global equity markets	668
11	Market integration and investment barriers in emerging equity markets	664
12	International financial integration	539
13	The obsolescence of capital controls?: economic management in an age of global markets	524
14	Financial market integration in Europe: on the effects of EMU on stock markets	518
15	EMU and European stock market integration	510
16	global financial market and risk premium on us stcok market	445
17	Price stability with imperfect financial integration	438
18	A decomposition of global linkages in financial markets over time	430
19	The global crisis and equity market contagion	400
20	global market integration an alternative measures and its applications	330
21	Stock market integration and financial crises: the case of Asia	317
22	Dynamic stock market integration driven by the European Monetary Union: An empirical analysis	298

23	economic structure?	
24	International asset allocation under regime switching, skew, and kurtosis preferences	277
25	Benefits and costs of international financial integration: theory and facts	268
26	Economic determinants of evolution in international stock market integration	240
27	How do trade and financial integration affect the relationship between growth and volatility?	238
28	Risk and global economic architecture: Why full financial integration may be undesirable	201
29	Comovements in international stock markets	129
30	Global financial crisis and emerging stock market contagion: A multivariate FIAPARCH–DCC approach	120
31	International financial integration through equity markets: Which firms from which countries go global?	113
32	Financial integration, financial development and economic growth	**97**
33	Global and regional financial integration: progress in emerging markets	92
34	Host–home country linkages and host–home country specific advantages as determinants of foreign acquisitions by Indian firms	90
35	Study of common stochastic trend and co-integration in the emerging markets: A case study of India, Singapore and Taiwan	83
36	Stock market integration and volatility spillover: India and its major Asian counterparts	82
37	Cointegration relationship and time varying co-movements among Indian and Asian developed stock markets	79
38	Contagion, decoupling and the spillover effects of the US financial crisis: Evidence from the BRIC markets	62
39	Volatility and cross correlation across major stock markets	55
40	International financial spillovers to emerging market economies: How important are economic fundamentals?	41
41	Stock market integration and dually listed stocks: Indian ADR and Domestic Stock Prices	40
42	The transmission of emerging market shocks to global equity markets	40
43	Equity market contagion during the global financial crisis: Evidence from the world's eight largest economies	40
44	Barriers to international investing and market segmentation: Evidence from Indian GDR market	38
45	Cointegration of major stock market indices during the 2008 global financial distress	33
46	Hedging emerging market stock prices with oil, gold, VIX, and bonds: A comparison between DCC, ADCC and GO-GARCH	33
47	Stock market integration in Asian countries: Evidence from wavelet multiple correlations	29
48	Correlation and volatility transmission across international stock markets: a bivariate GARCH analysis	25

49	Links between the Indian, US and Chinese stock markets	24
50	Global Integration of Central and Eastern European Financial Markets -The Role of Economic Sentiments.	21
51	Global financial crisis and spillover effects among the US and BRICS stock markets	21
52	Chinese and Indian Stock Market Linkages with Developed Stock Markets	18
53	Integration and dynamic linkage of Indian stock market wit BRIC -an empirical study	18
54	Comparative study of distribution of Indian stock market with other Asian markets	16
55	Market integration and efficiency of Indian stock markets: A study of NSE	16
56	Foreign Investors and Global integration of Emerging Indian Equity Market	13
57	Direct identification of crisis periods on the CEE stock markets: The influence of the 2007 US subprime crisis	13
58	US and domestic market gains and Asian investors' overconfident trading behaviour	12
59	Modelling regional linkage of financial markets	11
60	Financial integration for Indian stock market	10
61	Financial market integration: The Indian experience	10
62	Time-scale co movement between the Indian and world stock markets	10
63	Identifying regime shifts in Indian stock market: A Markov switching approach	9
64	A study on cointegration between Indian and American stock markets	9
65	Who are the net senders and recipients of volatility spillovers in China's financial markets?	9
66	Stock return, volatility and the global financial meltdown: the behaviour of Indian stock market	7
67	Financial integration between BRICS and developed stock markets	7
68	Communality in liquidity in Emerging markets: Another supply-side explanation	7
69	The 2007-2009 financial crisis on emerging markets: quantitative identification of crisis in continent-based regions	5
70	Are Asian stock market returns predictable?	3
71	Testing for extreme bulls and bears: a non-parametric perspective	2
72	Does Bilateral Market and Financial Integration Explains International Co-Movement Patterns1	2
73	Causal Effects of the United States and Japan on Pacific-Rim Stock Markets: Nonparametric Quantile Causality Approach	1
74	Linkages between India and three Asean stock markets: a co-integration approach	1
75	Dynamic global linkages of the BRICS stock markets with the US and Europe under external crisis shocks: Implications for portfolio risk forecasting	0
76	Financial Markets Integration : Appraising the Developed and Emerging Market Nexus	0
77	Assessing Time-Varying Stock Market Integration in EMU for Normal and Crisis Periods	0

Onakoya ab,seyingbo ,va(2017) financial markets integration: appraising the developed and emerging markets nexus , In this paper

the authors have explored the interdependence among developed and emerging markets . Utilized the diebold and yilmaz method to explore spill-over amongst markets. This study concluded the existence of interdependence among developed markets and emerging markets. The study acclaim that emerging markets should implement reforms able to enhance a valuable involvement in the integration of financial markets at global level .

Shaghil ahmed, brahima coulibaly, andrei zlate*(2017) international financial spillovers to emerging market economies: how important are economic fundamentals? The author in this study found out that the countries with relatively better economic fundamentals suffered less decline in their financial markets during financial market crisis of 2013 Taper tantrum episode. Countries which had received huge flow of funds from foreign countries suffered more during financial crisis of 2008.Overall the role of economic fundamentals had increased over period of time .

Hammoudeh s, Kang Sh, Mensi W, Nguyen DK(2016) Dynamic global linkages of the brics stock markets with the us and europe under external crisis shocks: implications for portfolio risk forecasting ,The authors in this study have examined the effect of financial crisis of USA in 2008-2009 and European debt crisis during end of 2009 on interlinkages among BRICS countries and USA and Europe .

It was found that the interlinkage was time varying and the interlinkages got stronger during 2007 and first half of 2012 , structural changes were also identified.

Wang gj, xie c, jiang zq, stanley he(2016) Who are the net senders and recipients of volatility spill overs in china's financial markets? The author has studied the relationship among the financial markets in terms of the volatility spillover effect during 2005-2015 , it was found that the financial markets in China were weakly integrated and Stock markets had highest volatility impact on other financial markets followed by bond market , and foreign exchange market, commodity future markets were net recipients of volatility effect

W Mensi, S Hammoudeh, DK Nguyen(2016) ,Global financial crisis and spillover effects among the US and BRICS stock markets ,the author has studied the effect of spillover between us market and brics(brazil, russia, india, china and south africa), The authors have used , the bivariate DCCFIAPARCH model, the modified ICSS algorithm and the Value-at-Risk (VaR) to inspect spillover effect among US and BRICS stock markets based upon daily stock market indices data for time period from September 1997 to October 2013 . Results showed significant evidences of different degrees of conditional volatilities and dynamic level of correlation among US and BRICS stock markets . Sudden changes on September 15 2008 the date of Lehman Brothers collapse showed sudden changes in these markets.

Gregorio De J (2016) Financial integration, financial development and economic growth , Based upon theoretical literature review author found that although weak but there exist relationship between level of financial market integration and depth of financial markets .But no direct impact on financial integration was found on growth. Therefore, to realize the benefit the depth of domestic financial makers need to be improved to get positive benefit of financial market integration on economic growth.

Rey H (2016) , Dilemma not trilemma: the global financial cycle and monetary policy independence,
In this paper author have analysed the measures which may help in minimize adverse effect of finaicial market interlinkage based upon a combination of following measures (a) targeted capital controls(b) acting

on the transmission channel cyclically by restraining growth in credit and leveraging during the upward moment of cycle , using macro prudence policyof own country (c)acting on channels of transmission by imposing stricter limits on financial leverages in terediaries.

Results show that most appropriate way to deal with Disturbance in global financial cycle is to take action directedwithaimed at the core cause of concerns (undue leverage and growthincredit). This appears torequir e a conex blend of a well thought out enactment ofpoliciesof macroprudential guided by aggressive stresstesting (b) and harder ratiosofleverage (c). Basedon the reasonof financial instability and se ttingatinstitutionallevel, the usage of capital controls (a) as a fractional substitution for macroprudential measures should not be castoff.

Chan K.C,Andrewg, Rent Kamlyi , Stulz M (2016) Global financial market and risk premium on US stock market ,the author has studied the influence caused by foreign influences on risk premium of US assets. it was found out that the conditional expected excess return of stocks in US is positively linked to the conditional covariance of the return of these stocks with the return on a foreign index but is not related to its own conditional covariance .

Rehman Mu, shah sma (2016) does bilateral market and financial integration explains international co-movement patterns1 The authors have studied the impact of market integration ,holding of foreign equity portfolio and rate of inflation on bilateral stock market moments .It was observed that there exist positive relationship between given set of variables in short run and long run . And difference of interest rate increase the co-movement .In the same manner foreign portfolio and market integration increase the bilateral moment of equity market.

Rajkumar gs(2015) linkages between India and three ASEAN stock markets: a co-integration approach

The author has used granger-causality and co-integration test to examin the relationship between Indian stock market and major stock markets of ASEAN Inidnesia, Malaysia and Singapore based upon closing indices from 2004 to2014. It was found that unidirectional relationship exist between India and other countries . India stock market has only short term influence on these markets but in long run no (co-integration) was found.

Balcılar M, Gupta R, Nguyen DK, Wohar ME(2015), Causal effects of the united states and japan on pacific-rim stock markets: nonparametric quantile causality approach, In this paper using non parametric approach authors have examined causal effect of US and Japanese stock exchange on countries of pacific-rim-region based upon data collected from 25 June 1984-25 June 2014 to study causality in long run

. It captures causality in both returns and variance in markets at different points of conditional return distribution model. It was found that there is different degree of causality in return and volatility at different point of time .

Bai M, Qin Y (2015) ,Commonality in liquidity in emerging markets: another supply-side explanation,The author conducted a study on 18 emerging markets and he found that liquidity of individual stock is more affected by systematic volatility then idiosynctaric volatility , pointing towards a fact that higher co-movement in moment of liquidity could be caused by higher level of co-variation in volatility of stock and co-variation in inventory risk and negatively related to development level of market . Also suggest that there is no presence of factor of global liquidity and suggested that diversification of liquidity risk can be done by constructing global portfolio

Nashier T(2015) Financial Integration between BRICS and developed stock markets has studied the integration among stock markets of BRICS (Brazil , Russia ,India ,China and South Africa) and stock

markets of U.S and U.K **.** Using daily closing price of major stock indices of these countries from 1st January 2004 to 31st december 2013,the integration in short run and long run is studied using correlation test and johansen's co integration test . It was found that there existed static integration in short term and dynamic integration in long run . The benefits of any diversification or speculative activities between these markets is limited.

Narayan Seema(2015) Are Asian stock market returns predictable ?The author has conducted predictability test on certain Asian stock markets by utilizing monthly data for a period from march 2001 – April 2012 . Bull and bear phase of asian market are predicted using the U.S stock market bull and bears.
Author has used a two state markov switching model to differentiate between bull and bear phase in USA
A two-state markov-switching model is employed to distinguish between the bull and bear regimes in the U.S and stock markets of Asia. Based upon the test of prediction it was found that Market returns and bear of US are important determining factor of Bull and bear of Asian Markets .

Dasgupta Ranjan(2014),Integration and dynamic linkages of the Indian stock Market with BRIC – an empirical study, The authors have studied interrelationship between BRICS stock markets in short run and long run with special reference to India .It was found that in long run and also in short run bidirectional Granger relationship only existed in between Indian and Brazilian stock markets .Also the Brazilian stock market is granger caused by Chinese Market , Chinese market in turn has causal effect on the Russian stock market . Results suggest that Rusian and Brazilian stock markets are significantly impacted by Indian stock market .

Sehgal S, Gupta P,Deisting F(2014), Assessing Stock Market Integration in EMU economies for Normal and Crisis Periods To study the financial integration , authors have

Used variety of parameters to study integration patter during normal and crisis period .EMU countries have been studied by categorizing into three categories A,B,C based upon size of economy .Group A consist of member countries which are old and have large economies . Group B consist of countries of medium size . Countries with small size have been categorized under group C . Time varying integration level has been studied based upon seven indicators

sigma convergence ,beta convergence, , adcc-egarch, variance ratio, , dynamic cointegration,common factors model, and market synchronization measure.Results suggest that economies of EMU (Group A) depict strong level of financial integration .Followed by Medium sized economies(Group B) having moderate level and lastly Grou C economies showing weakest level of Integration .Also it was found that form normal to crisis period integration level changed ,especially strong among countries in Group A

Olbrys J, Majewska E(2014) ,The 2007-2009 financial crisis on emerging markets: Quantitative identification of crisis in continent-based regions – The authors in this paper have worked on identification of crisis period at different continent level also , the effect of increasing cross-market correlations in the crisis compared to the pre-crisis period in the context of contagion is examined . The results are consistent with the literature and confirm that tests for contagion based on cross-market correlations are problematic due to the bias introduced by changing volatility in market returns. The results show that there was no global world market integration, means there was no globalization during 2007-2009.

Chuang Wi, Lee BS, Wang Kl(2014),U.S. And domestic market gains and asian investors' overconfident trading behavior, This paper examines whether both US and domestic market gains make

Asian investors trade more aggressively subsequently to market gains .It was found that both US and domestic and US market gains make Asian investors trade with more confidence in bull markets , in period of high investor sentiment, and in periods of extremely high market returns after controlling for the alternative theories in explaining the return-volume relation. Also after the financial crisis in 1998 Asian markets got further more integrated with U.S market also find that Asian investors show more significant overconfident trading behaviour in markets with a short-sale constraint than in markets without it.

Olbrys J, Majewska E(2014) Direct identification of crisis periods on the stock markets: the influence of the 2007 U.S. Subprime, The main aim is to examine whether crisis is common in all markets. The period investigated (May 2004 – April 2013) includes the 2007 U.S. Subprime crisis period. The pagan and sossounov(2003)methodology is used for dividing market states into bullish and bearish markets, and it was found that Oct 2007 – Feb 2009 as the common period of the global financial crisis for the U.S. And cee stock markets (except slovakia). For two EMU countries, i.e. Slovakia and Slovenia, a distinguished influence of the euro area crisis, which started in spring 2010 was observed. Also it was found that the correlation structure between US and other markets is time varying , especially during crisis period .

Dungey M, Gajurel D(2014) Equity market contagion during the global financial crisis: evidence from the world's Eight largest economies Using Latent factor model authors have examined the contagion effect from US to advanced and emerging economies during global financial crisis period .Significant contagion e□ects from the US equity market to equity markets in both advanced and emerging economies was identified . Contagion significantly affected volatility among these countries .However less contagion was seen from US to advanced economies except Japan .Results suggest that contagion e□ects are not strongly related to the level of global integration.

Bekaert G, Ehrmann M, Fratzscher M(2014) contagion the authors have analyzed the effect of the 20to 2009 financial crisis to 415 country□industry equity portfolios. Factor model has been used as methodology to predict financial crisis and to determine contagion residual correlation has been used .While evidence of contagion from the united states and the global financial sector, the effects are small on the other hand , there has been substantial contagion from domestic markets to individual domestic portfolios, the severity of contagion was found to be inversely related to fundamentals of domestic market .

Dr Subha MV, Mr. Nambi Thirupparkadal S.(2013) markets, the authors have studied the cointegration between Indian and American Stock markets on the basis of daily closing data for the period from 1st January to 31st December 2008 . During the given time frame it was found that Indian stock Markets are not dependent on US stock Market , confirmed that there is absence of cointegration between Indian and American Stock Market

Tiwariak, Darab, Bhanjan,Shaha(2013)Stock Return, volatility and the global financial meltdown: the behavior of Indian stock market, The aim of the study is to examine Impact US crisis on volatility of stock returns on of Indian Stock markets. The mean returns were found to be lowest during crisis period , post crisis period it soared. Both the dummies suggest that volatility has been highest during the crisis period and it came down during the post crisis period. Overall it was found that impact of financial crisis in US on Indian stock market volatility was significant.

Basher SA, Sadorsky P(2013), Hedging emerging market stock prices with oil, gold, vix, and bonds: a comparison between dcc, adcc and go-garch :the author has used dcc , adcc and go-garch to model volatilities and conditional correlations between emerging market stock prices , oil prices ,vix, gold prices and bond prices. A rolling window analysis is used to construct out of sample one step ahead forecast of

dynamic conditional correlations and optimal hedge ratios .in most cases it was found that oil price is best to hedge emerging market stock prices .hedge ratio from adcc model are preferred for hedging emerging market stock price with oil ,vix or bond . Hedge ratios from the go garch are most effective for hedging emerging market prices with gold in some situation.

Dimitriou D, Kenourgios D, Simos T(2013) Global financial crisis and emerging stock market contagion: A multivariate FIAPARCH–DCC approach , Authors have used multivariate fractionally integrated asymmetric

power arch (fiaparch) dynamic conditional correlation (dcc) framework to investigate contagion effect among five major emerging equity markets Brazil, Russia,India, China and south Africa (BRICS) and USA during the period 1997–2012 during various phases of crisis period. The empirical evidence does not confirm a contagion effect for most BRICS during the early stages of the crisis, indicating signs of isolation or decoupling. However linkage saw a growth again after the lehman brothers collaps. Moreover, correlations among all BRICScs and USA increased from early 2009 onwards, depicting that their dependence is larger in bullish than in bearish markets.

Basher SA, Sadorsky P(2013), Hedging emerging market stock prices with oil, gold, vix, and bonds: a comparison between dcc, adcc and go-garch : The authors have used a variety of measures dcc , adcc and go-garch to determine relationship between stock prices of emerging markets, gold prices, bond prices .It was found that oil price is best price to hedge stock prices in emerging markets.

Verma S, Mahajan N(2012) Stock Return, Volatility and the Global Financial Meltdown: This study examines the integration of nine Asian stock markets using the new methodology of wavelet multiple correlation and multiple cross-correlation proposed by fernandez (2012). Results of this study show that Asian stock markets are highly integrated at lower frequencies and comparatively less integrated at higher frequencies. For international investors Asian markets offer little scope for gains from international portfolio diversification especially for monthly ,quarterly and bi annual time horizons whereas, higher chances of gains can be expected at intraweek, weekly, and fortnightly time prospects.

Deora R, Nguyen DK(2013) Time-scale co-movement between the Indian and world stock Markets The results of this paper show that stock returns in India and world stock markets have time varying Also both the direction and magnitude of co-movement between the world and Indian markets vary greatly across the time scales used. As the level of the decomposition increases, the average correlation also increases between the two markets, thus resulting into a reduction of potential diversification benefits.

Sakthivel P, Bodkhe N, Kamaiah B ,Correlation and Volatility transmission across International Stock Markets: A Bivariate garch analysis The author has empirically analyzed the correlation and transmission of volatility across international stock markets by using bivariate garch model . Long run and short run integrations are examined through Johannsen cointegration and vector error correction models respectively. The results of johansen test show that long run co-integration is found across international stock indices prices. US and Japanese stock market receives information simultaneously and then transmitted to other stock markets i.e Indian and European markets . Bi directional volatility spillover was found US and Indian stock markets. Finally, results show that a unidirectional volatility spillover exist from japan and United kingdom to India.

Gupta R, Guidi F(2012) cointegration relationship and time varying co-movements among Indian and Asian developed stock markets ,The author has studied interlinkage between the Indian stock market and three developed Asian markets (i.e. Hong kong, Japan and Singapore). The index prices are non-stationary therefore used cointegration methodologies in order to explore interdependencies.. Results suggest that in the longterm the benefits for investing in india are limited. Also the estimation of the

time-varying conditional correlation is done among the markets, it was found that correlation rise really high during crisis period ,while they return back to normal level after crisis period

Buckley PJ, Forsans N, Munjal S (2012) Host–Home Country linkages and host–home country specific advantages as determinants of foreign acquisitions by Indian firms , it finds home country specific variables, such as the cost of capital, the exchange rate and language – play important role. Also do host country location factors such as market size, local intangible assets but not, in this case, natural resources as motives for FDI. Also it was found that host -home countries bilateral trade relations play a significant role in affecting the behavior of foreign investors.

Wasim,Ahamad,Bandi(2011) Identifying regime shifts in Indian stock market: a markov switching approach The author has used a two state markov switching autoregressive model to identify market regime under bull and bear phase in stock markets of India.the model predicts that Indian stock market will remain under bull regime with very high probability compared to bear regime. The results also identify the bear phases during all major global economic crises including recent us sub-prime in 2008 and European debt crisis in 2010. The paper concludes that the Indian stock market is more sensitive to external shocks implying that there is scope of policy interventions.

Joshi P(2011) Market integration and efficiency of Indian stock markets: a study of NSE The author in this paper has studied three aspects firstly study of co movements of stock markets of USA , Brazil, Mexico ,China and India , secondly the speed of adjustment of their coefficient and determine the level of their efficiency of stock markets as a result of initiatives and regulatory measures taken by NSE and SEBI . The analysis of co- movement in markets reveals that there is an evidence of cointegration among the markets indicating that stock prices in the countries studied here share a common trend. Secondly The results reveal that the speed of adjustment of Indian stock market is higher than other stock markets of the world. .Thirdly based upon event methodology it was found that stock markets became efficient at information processing in recent time by way of few regulatory measures undertaken by SEBI

Gupta N, Agarwal V(2011) comparative study of distribution of Indian stock market with other Asian markets in this paper based upon stock return data of India and five other Asian countries correlation level is determined among these countries . Based upon this study it was found that among India and hong kong, indonesia, malaysia and japan correlation was identified . Compartively Indian and Korean markets showed higher level of correlation which weaken in short run. It can be concluded that Indian market offer benefiting opportunity to investors abroad to diversify both in long run as well as short run

Beckmann J, Belke A, Kühl M(2011) Global Integration of central and eastern European financial markets—the role of economic sentiment , the author has studied the importance of different economic sentiments e.g consumer moods , for central and eastern European countries during transition process results for the short run suggest that economic sentiments in general are influenced by share prices .It was also found that European stock market moments played significant role in effecting the Central and Eastern European Countries share price and Income .The level of significance increased with increased level of interlinkage .

.**Poshakwale SS Thapa (2010) Foreign Investors and Global Integration of Emerging Indian Equity Market ,**this paper studies the influence of foreign investment on short and long tenure relationship on emerging indian equity market with global equity markets. Based upon daily returns series and equity portfolio investment made by foreign institutional investors , it was found out that the trading activities of foreign investors significantly affected the co-movement of Indian stock market with major stock markets in short run and long run . It was concluded that significant flow of foreign investments significantly influenced the level of integration of Indian stock market with global markets.

Assidenou KE(2011) Cointegration of major stock market indices during the 2008 global financial distressthis paper examines the properties of cointegration of major capital markets indices during the september, 2008 / august, 2009 episode of the financial and banking crises originated in U.S markets. This paper shows that during the deeper financial crisis period, Asian major markets indices were cointegrated.

Singh GSP(2010) Chinese and Indian stock market linkages with developed stock markets, The authors in this paper have examined linkage between two key emerging markets i.e China and India with developed markets of the world . Data has been collected for sample period from January 2000 to December 2009 , countries coverd in this study include UK, Japan ,Hong Kong . Authors found that Indian and Chinese markets are correlated with all four developed markets with atleast unidirectional causality effect .

Mukherjee nath k, mishra rk (2010) stock market integration and volatility spillover: India and its major asian counterparts the authors have studied return and volatility spillover among indian stock market with 12 other developed and emerging Asian countries for tenure from November 1997 to April 2008 . There exist different degree of correlation both in terms of returns and squared return series , among Indian stock market with other asian countries the simultaneous intraday return spillover among India and almost all the sample countries are found to be significantly positive and bi-directional

Stiglitz JE(2010) undesirable this paper has studied and provided a framework to determine optimal level of financial integration .based upon study author suggests that full level of integration is not ideal level of integration given an option between two polar regimes, full integration or autarky, autarky may be superior. Under this study author has provided the framework within which optimal degree and form of financial integration can be determined . Within this general framework, full integration is not in general optimal. Certainly, faced with a choice between two polar regimes, full integration or autarky, in the simplified model autarky may be better option.

Candelon B, Metiu N(2009) Testing for extreme bulls and bears: a non-parametric perspective ,the authors have studied the bull and bear behavior that occurred on 9 stock markets of OECD countries. Study has been conducted by evaluating bull and bear phase on multiple parameters such as the asymmetry or amplitude of cycle and not just the time duration moreover the bull and bear phase has been considered with respect to particular feature consider a bull or a bear as extreme in relation to particular feature , if it seems as an outlier in the historical distribution. New non-parametric strategy had been setup to test extreme events, which showed heterogenous effect of sub prime crisis on different countries .

Mukhopadhyay b(2009) Financial market integration: the indian experience the author has studied the financial integration based upon period from 1995 to 2008 using regional indices , country indices and sector indices . It was found firstly that the countries at same development level are more integrated than countries at different development level , secondly market integration is generally lead by developed countries , and thirdly emerging markets are more vulnerable than developed markets during time of distress .

Pukthuanthong K, Roll R(2009) global market integration an alternative measures and its applications ,the author in this paper has drawn the attention towards the development of alternative method to measure financial market integration . This paper focusses and suggests that actual financial market integration is influenced by multiple factors , such as global macro factors or even industry factors .

Benigno P(2009) Price stability with imperfect financial integration , The author has evaluated the effect of monetary policy rule when international financial markets are not complete . General equilibrium model has been used to evaluate magnitude of imperfect risk sharing . It was found that with non-zero holdings of net foreign assets, there exist non-negligible gains from following a coordinated monetary policy instead of a price-stability policy. These gains are in the range of 0.01-0.10 percent of a permanent shift in steady-state consumption.

Diebold, F. X., & Yilmaz, K. (2009), **Measuring financial asset return and volatility spillovers, with application to global equity markets** the author has studied and provided measure for interdependence of asset returns and /or volatilities .separate measures have been given for return spill over and volatility spill over ,facilitates measure during crisis and no crisis period . Based upon study of 19 global equity markets from early 1990 it was found that volatility and returns behaved in different ways while return spillover showed a gentle increase volatility spillover displayed clear burst.

Mendoza, E. G., Quadrini, V, & Rios-Rull(2009) financial integration , financial development and global imbalance this paper shows that when countries at different development level integrate ,it results into persistent and large global imbalance . Countries with deeper financial markets tend to reduce their level of saving and accumulate large stock of net foreign liability , Also financial heterogeneity also affect the composition of the portfolio of net foreign asset . Countries having deeper financial markets borrow huge amount from foreign countries and invest high return foreign risky assets.

Cuadro-sáez L,fratzscher M, Thimann C(2009) the transmission of emerging market shocks to global equity markets The author has analyzed the significance of emerging economies in terms of whether and to what extent they have impact on global financial markets , it was found that EMEs had not just consistent but significant impact on global equity markets .The economic significance of EME shocks is in particular emphasized by their remarkably persistent effects over time. It was found that EME influence markets in good and bad times . Lastly it was found that the degree of effect was heterogenous in nature based upon the economic exposure of individual country , which is relatively higher for european countries

Morana ,Beltratti A(2008), Co-movements in international stock markets in the paper monthly realized moments for stock market returns for the US, the UK, Germany and japan are used to evaluate the linkages holding across moments and markets over the period 1973-2004., the results show progressive integration of the four stock markets, leading to increasing co-movements in prices, returns, volatility and correlation.

Claessens s, schmukler SL(2007) **,International financial integration through equity markets: which firms from which countries go global?** The authors have studied the international financial integration based upon analysis of various country level and firm level factors and there effect on firm from various countries raising capital, trading equity, and/or cross-listing in major financial markets. It was found that although with time there has been significant increase in integration level but only few countries and firms actively participate .Those firms that internationalize belong to large and more open economies with higher

returns and more foreign sales . Firm characteristics and constraints of countries are likely to remain a constraint

Claessens S, Schmukler SL(2007) International financial integration through equity markets: which firms from which countries go global? The author has studied the international financial integration based upon analysis of various country level and firm level factors and there effect on firm from various countries raising capital, trading equity, and/or cross-listing in major financial markets. It was found that although with time there has been significant increase in integration level but only few countries and firms actively participate . Firms more likely to internationalize are from larger and more open economies, with higher income, and better macroeconomic environments. These firms tend to be larger, grow faster, and have higher returns and more foreign sales. International financial integration will likely remain constrained by country and firm characteristics.

Chattopadhyay SK, Behera SR(2006) Financial integration for Indian stock market , In this paper authors have studied the impact of reforms undertaken for advancement of Indian stock market on integration with the developed stock markets in the world. Yet Indian stock markets were not found to be integrated with world, only for short run unidirectional influence was found . the developed stock markets, viz., USA, UK and Hong Kong stock markets granger cause the Indian stock market but not other ways around . However, no causality was found between Japanese and Indian stock exchanges .

Chen H, Lobo BJ, Wong WK(2006) Links between the Indian , US and Chinese stock markets , This study has examined the bilateral relations between three combinations of stock markets , namely India-China, India-U.S., and China-U.S .Results show that all three pairs of stock markets are fractionally cointegrated. The U.S. Stock market played a dominating role in the relations with the other two markets, whereas there is an interactive relationship between the Indian and Chinese stock markets.

Kose MA, Prasad ES, Terrones ME(2006) how do trade and financial integration affect the relationship between growth and volatility? This paper studied the impact caused on growth and volatility due to financial and trade liberalization .It was found that a negative relationship between growth and volatility was found during 1990 , trade and financial liberalization weakened this relationship

Hardouvelis GA, Malliaropulos D, Priestley R(2006) EMU and integration of the European Stock Markets This paper finds that the degree of integration had ups and downs,but in the second half of the 1990s,as these differences reduced in the process toward EMU, stock markets congregated toward full integration; that is, their expected returns became increasingly determined by eu-wide market risk and less by local risk .

Kim SJ, Moshirian F, WU E(2005) Dynamic Stock market integration driven by the European monetary union: an empirical analysis this study was conducted in order to determine the influence of european monetary union on the stock market integration over the period 2 january 1989 – 29 may 2003 using a bivariate egarch framework with time-varying conditional correlations . Results show that after introduction of EMU a clear change in regime of integration was found .Based upon linear regression system , it was also found that integration at regional and global level were significantly driven by convergence of macroeconomics related with introduction of EMU and level of financial development

alfaro l, chanda a, et al(2004) fdi and economic growth: the role of local financial marketsthe purpose of this paper is to examine the various links among foreign direct investment, financial markets and growth.the level of development of local financial markets is crucial for the positive e□ects to be realized..the result of this paper suggests that countries should weigh the cost of policies aimed at attracting fdi versus those that seek to improve local conditions. These two set of policies need not be incompatible,

better local conditions not only attract foreign companies but also they can maximize the benefits of foreign investments.

Forbes kj, chinn md(2004) a decomposition of global linkages in financial markets over timethe authors have conducted this study in order to test how real financial linkage among countries can help in explaining why movement in the largest markets of the world effect financial markets of the world , how the pattern of cross -country linkages have changed over given period of time .Specifically bilateral flows of trade are significant and large determinant of linkages at cross-county level for stock and bond market . Usually Bilateral foreign investment is insignificant .

Lane PR , Milesi-Ferretti GM (2003) international financial integration the authors have studied the impact of financial integration on economic growth and also assess whether this relationship depends on economic development , financial development , legal system development , government corruption and macroeconomic policies using a wide range of measures of international financial integration on 57 countries and an variety of statistical methodologies, concluded that international financial integration helps in accelerating economic growth even when particular economic , financial , institutional and policy characteristics were controlled .

Nath GC, Verma S(2001) , Study of common stochastic trend and co-integration in the emerging markets: a case study of India, Singapore and Taiwan , In this paper authors have conducted this study to examine the interdependence of major Asian stock markets . Based upon this study no equilibrium in long run was found because no co integration between stock markets were found for given period ,although mild level of causality was found for few years although for most of time these markets were found not to be interlinked

Hansda Sk, Ray P(2003) Stock market integration and dually listed stocks: Indian ADR and domestic stock prices The authors in this paper conducted this study to determine the interdependence of 10 indian companies of which ADR are listed on US stock exchange .It was found that strong correlation existed between in price of stocks dually listed The competing domestic stock exchange, viz., national stock exchange (nse) too is found to share the same bi-directional relation scrip-wise with the nasdaq / new york stock exchange. Also, the impulse response indicated a positive shock in price on domestic markets gets positively transmitted on scrip listed on international stock market on very next day

Yang j, Kolari JW, Min I(2003) stock market integration and financial crises: the case of asia the authors have examined long-run relationships and short-run dynamic causal linkages among the u.s., japanese, and ten asian emerging stock markets. The results suggest that mostly for all Asian countries selected as sample showed that both long run relation and short run cointegration strengthened during crisis period . The degree of integration among countries tends to change over time, especially around periods marked by financial crises.

s(2001) study of common stochastic trend and co-integration in themerging markets: a case study of india, singapore and taiwan, In this paper interdependence of south Asia's three major stock markets has been studied . Author has used daily data for a period from January 1994 to November 2002 of India(Nifty),Taiwan(Taixe),Singapore(Sti). Based upon this study it was found that there existed no equilibrium in long run since no cointegration between indices of stock markets was found for the whole period although mild level of causality was found for some years , although for most of the time markets were found not to be interlinked

Goetzmann wn, li l, rouwenhorst kg(2001) long-term global market correlations this paper has examined the correlation structure of the major world equity markets over 150 years. It was found that

correlations vary significantly through time and are highest during periods of economic and financial integration such as the late 19th and 20th centuries. Analysis suggested that diversification benefit were not constant , they lowerd compared to history of capital marekt

Fratzscher m(2001) financial market integration in europe: on the effects of emu on stock markets The authors studied the process of integration of European equity market since 1980's focusing on role played by EMU specifically concentrating on effect of change in exchange rate volatility .three key results were found first, european equity markets have become highly integrated only since 1996. Second, the euro area market has gained considerably in importance in world financial markets and has taken over from the US as the dominant market in Europe .and third, the integration of European equity markets is majorly drawn by formation of EMU , particularly by elimination of exchange rate volatility

Jitendranathan T , Nirmalandan R(2000) Barriers to International Investing and market segmentation: evidence from Indian GDR market ,Authors have studied how and why the degree of co-movement across different equity markets vary over time .It was found that high degree of market efficiency and integration due to interaction of all markets on the same day . Also increased level of integration among countries was found among markets .Regression analysis was conducted to determine relationship between fsctors responsible and integration level , based on it was found that various different macro factors were responsible for different level of integration among markets

Bracker k, dockin DS, Koch PD(1999) economic determinants of evolution in international stock market integration ,this study explores how and why different pairs of national equity markets display differing degrees of co-movement over time. It is observed that greater degree of co movement reflect greater degree of stock market integration.

.**Ramchand l , susmel r(1998) markets ,** Using switching Arch and Swarch technique the authors have examined the relationship between variance and correlation in conditional state and time varying framework.that correlation between other world markets and US was found to be 2to 3.5 times higher during high variance state of US as compared to low variance state . Also portfolio resulting from SWARCH model identified lead to higher Sharpe ratios then GARCH framework .

Bekaert g, harvey cr (1997) evolatility, firstly the authors have studied characteristics of emerging market volatility. Author has provided volatility measure models to record emerging market volatility secondly , author has determined list of factors affecting volatility . In fully integrated markets, volatility is strongly influenced by world factors. In segmented capital markets, volatility is more likely influenced by local factors.. Thirdly author has identified the factors responsible for difference in level of volatility in different markets it was found that countries with more open system have significantly lower volatilities. Also find that political risk as proxied by credit quality explains a large amount of the cross-sectional variation in volatility . Lastly to study the e□ect of capital market liberalizations on volatility. Given the time-series models, investigate whether volatility decreases after liberalizations. Results suggests that volatility either remains the same or decreases in 13 of 17 countries .

Bekaert G(1995) market integration and investment barriers in Emerging equity markets the author has developed a return based measure of market integration for nineteen emerging equity markets . After this author also analysed relation between this measure ,other return characteristics and broadly define investment barriers. Global factors share in terms of time variation of expected returns had gone down and also the predicitbility in most of the markets had gone down .secondly emerging markets were differently integrated with us market and the reason was not the different investment barriers . Most significant barriers to emerging market integration included bad credit rating , high and variable inflation rate ,lack of high regulatory framework , lack of sufficient country funds or cross listed securities and limited size of stock markets .

Bekaert G, Harvey CR(1995) time□varying world market integration the authors have used returns data to measure level of integration based upon conditional regime switching model . The expected returns

which were segmented from other world markets at one point in sample time period became integrated in later on in sample period . Emerging economies show integration level which was time varying. Based on prior available knowledge some markets were found to be more integrated than other markets . There exist different degrees of integration among the countries it's a time varying concept.

bekaert G(1995) the obsolescence of capital controls?: economic management in an age of global markets The authors has for 19 countries developed a return based model to measure the integration level , it was found that share of global factors influencing the variation of expected returns over time has gone down . Secondly emerging markets were differently integrated with US stock market and it was not due to difference in investment barriers .Most significant barriers to emerging market integration included bad credit rating , high and variable inflation rate ,lack of high regulatory framework , lack of sufficient country funds or cross listed securities and limited size of stock markets .

Arshanapalli B, Doukas J(1993)International stock market linkages: evidence from the pre-and post-october 1987 period For a period from January 1980 to May 1990 the authors have studied interaction and linkage among the major stock markets of the world .The results show that extent to which stock market prices are cointegrated has changed significantly since the crash of October 1987,only Nikkei stood out to be only exception .(Specifically, for the period prior to crash markets of France , Germany and UK were not related to the stock markets of USA . For the period after crash results show that all three European stock markets are strongly integrated with stock market of US . Substantial impact of US market was found on Germany , France and UK market after the crash period

Stulz RM(1992) ,Global Financial Market and Risk Premium on US stock market Authors have investigated the relationship between the conditional expected excess returns conditional risk of S&P 500 market measured in terms of conditional volatility and its conditional covariance with the returns on some index of foreign stocks . It was found that conditional covariance of the S&P 500 returns with the returns of foreign stocks is significantly positively related to the conditional expected excess returns of the S&P 500 over 1978 to 1989

Hamao Y, Masulis RW, Victor NG(1990) correlations in price changes and volatility across international stock markets ,The author conducted a study to determine relationship between price and price volatility across three major stock exchanges Tokyo , London and New York based on daily opening and closing price of indexes It was found that volatility in terms of price transmitted from New York market to Tokyo market , London market to Tokyo market and New York market to London market but no evidence of volatility spill in terms of price was found over in other direction .

FrenchKR,Schwert,GW,etal(1987)expected stock returnsand volatilitY The author has examined the relationship between stock market returns and volatility .The author has found that there is Expected market risk premium(Difference between Expected return on a stock portfolio and yield on treasury bill) has positive relation with predictable volatility of stock returns .Also ,there exist negative relationship between unexpected stock market returns and unexpected change in volatility

RESEARCH GAP

Based on review of papers of international financial market interlinkages following gaps were identified, directing towards scope for research.

- Although researches have been conducted in past which studied interlinkage of Indian financial markets but there is scope for conducting an integrated research focusing completely on Indian stock market which study overall behaviour of interlinkage of Indian stock market .
- Most of the studies have been conducted during the or around the time focusing on major crisis episodes happening in stock markets . There is scope for conducting a research covering the entire period post 2007-08 global meltdown period divided in bull and bear phase .

- There is scope for conduct of study to determine behaviour of Indian stock markets based upon its interlinkage with major International stock markets

MOTIVATION OF STUDY

The level of development an economy is significantly influenced by financial markets . Financial markets help mobilizing resources from savers and investors . Post liberalization there has been wide door opening for foreign investors leading to increase in size of financial markets .Due to this international moment of funds the financial markets have become dependent on each other .The integration has lead to creation of a scenario where change in one market can be felt in markets of other countries also .

Developing nations like India have attracted lot of inflow of funds from other countries because of its potential to offer appreciation and growth on invested funds . Due this exposure to international funds these countries experience the moments of change caused by the moments in markets of countries they are integrated with . The effect of financial market interlinkage can be either positive or negative . Understanding and managing the level , behavior and related aspects of financial market interlinkage calls for due attention in order to protect the financial markets from unnecessary jitters caused by shocks in markets of other country Considering the significance of the subject matter of interlinkage of financial markets , a lot of work has already been done focusing on various aspects covering different markets globally including India .But there is scope for conducting a detailed research focusing on overall behavior of Interlinkage of Indian Stock Markets. I wish to conduct such in-depth study covering the aspects of measuring the level , analyzing its behavior , determining the factors influencing level of Interlinkage and predicting the stock market behavior based on the level of Integra

RESEARCH QUESTIONS

Q1.What is the level of Interlinkage of Indian stock market with other stock markets ?

Q2. What are the factors influencing the interlinkage of Indian markets with other markets ?

Q3 How to predict stock market behavior in India based upon integration with major stock markets of the world ?

OBJECTIVE

1. To determine the linkage of Indian stock market in short run and long run with major global stock markets under bull and bear phase .
2. To determine the factors influencing the level of interlinkage of Indian stock markets with major stock markets of the world .
3. To predict the behaviour of Indian stock market on the basis of linkage with major stock markets of the world

HYPOTHESIS

H01 Indian stock market indices does not granger cause major stock market indices of the world .

HA1 Indian stock market indices granger cause major stock market indices of the world .

H02Bull and bear phase does not affect the pattern of interlinkage of Indian Stock markets with international stock markets .

HA2 Bull and bear phase affect the pattern of interlinkage of Indian Stock markets with international stock markets

RESEARCH METHDOLOGY

Research Design: Research design means a plan , strategy and structure of examination strategy to get answers to all research questions .It is detailed framework how research will be conducted . It will included information like how to collect data ,what tools to be used , how tools and methods identified are to be used for analysis of data

Here in this study research design is exploratory.

Sampling

1) Universe : Universe for the purpose of this study includes all the stock markets in the world
2) Sampling Unit : Sampling unit is stock exchange .
3) Sampling Method :Non probability method of sampling has been used .The top stock exchanges have been selected for the study
4) Sample Size : Total of 5 stock exchanges each representing different country have been selected . They have been selected out of top 20 stock exchanges as per list published on website(visualcapitalist.com).Sample includes USA(New York Stock Exchange) ,U.K(London Stock Exchange),Hongkong(Hongkong Stock Exchange),Japan(Tokyo Stock Exchange) ,China(Shanghai Stock Exchange)) .The time frame for conduct of study shall be from year 1st January 2009 to 30th April 2018 .

Data collection method : The study will be based on secondary source of data .The data shall be collected form the websites of NSE , BSE, websites of other stock exchanges , websites providing historical data like finance.yahoo.com , trading economies.com , website of world bank etc.

Variables Identified :

1. **Indian Stock Market Index :** As part of representation of Indian Stock Market ,Bombay stock Exchange Index Value shall be used . For that Indices SENSEX shall be used.
2. **USA Stock Market Index :** As part of representation of USA stock Market, NASDAQ Index Value shall be used . For that Indices S &P 500 shall be used.

3. **Japan Stock Exchange Index :** As part of representation of Japanese stock Market ,Tokyo Stock Exchange Index Value shall be used . For that Indices Nikkie 225 shall be used.
4. **U.K Stock Market Index** : As part of representation of U.K stock Market , London Stock Exchange Index Value shall be used . For that Indices FTSE 100 shall be used.
5. **Hongkong Stock Market Index** : As part of representation of Hongkong Stock Market, Hongkong Stock Exchange Index Hang Sang shall be used
6. **China Stock Market Index :** As part of representation of Chinese Stock Market, Shanghai Stock Exchange Index Shanghai Composite Index shall be used
7. **Factors Influencing Stock Market Interlinkages :** For the purpose of study of factors affecting stock market interlinkages following factors have been identified which may affect the level of linkage among the countries

- Level of Bi lateral trade Relations
- Economic conditions
- Investor Sentiments
- Economic Crisis
- Global Shocks
- Financial and Political news in markets

Data analysis tools

- **Descriptive statistics**: To prepare data for econometrics mean , median , mode , maximum, minimum ,skewness , kurtosis ,standard deviation ,Jarq-bera, probability
- **Graphical Representation** : The graphs will be utilized to give pictorial representation
- **Unit root test : ADF (Dickey and Fuller, 1979; 1981) and Phillips and Perron (1988) are used to test stationarity of data**
- **Jarque-Bera test (JB) :** To test normality of probability distribution of time series data
- **To study short term and long term relationship between stock markets**
  Short Term Relationship : Correlation , Granger (1969) pairwise causality test.

  Long Term Relationship :Johansen and Juselius (1990) Trace and Maximum Eigenvalue tests, and Engle and Granger (1987) cointegration test will be used to test the long-run relationships among the stock market indices.
- **Regression Analysis**: In order to determine the factors influencing the integration of financial markets a regression model shall be used based upon various macro and financial variables . The model shall study the effect of factors with countries individually
- **To determine the prediction of Indian stock market based upon other international stock markets :** Firstly Markov regime switching model shall be used to determining the bull and bear of the markets . After determining the bull and bear phase using **Markov-Switching** Regression Model shall be used to divide the index data of stock markets into bull and bear phase, then correlation among countries shall be calculated . Following that a regression model of predictability shall be applied to study relation between , bulls, bears and returns of the stock markets

CHAPETRIZATION PLAN

Chapter 1 Introduction

This chapter will provide in depth introduction about main area of interest of the study i.e "Financial market integration . Since this study will concentrate on Indian stock markets therefore it will also cover an overview of Indian Capital Market . Since this study will be based on various stock markets so it will also involve detailed description of those stock markets . The entire chapter will be categorized into following subsections

1 Financial markets: An Overview
2 Interlinkage of financial markets
3 Introduction of markets under study

Chapter 2 Research Methodology This chapter in thesis will explain the entire process how research has been conducted. With the motive to explain this process this chapter will cover various aspects like research design , literature review and sample design etc . This chapter will be categorized into following sections

Introduction of research methodology

Review of literature

Need for study

Objective of study

Hypothesis

Period of study

Sample and Data collection Method

Statistical tools for hypothesis testing

Chapter 3 Analysis and Interpretation of data

This chapter will include detailed description regarding collection of required secondary data and its analysis using required tools and techniques . And also hypothesis will be tested using various techniques in order to determine there status in terms of acceptance or rejection

Chapter 4 Conclusion

In this chapter conclusion of research work will be given based upon findings of data analysed and its interpretation. Also this chapter will include suggestive measures to control adverse effect of financial integration of stock markets will be included. This chapter will also include the limitations faced during conduct of this research.

Findings

Suggestions

References , Bibliography

References

French, K. R., Schwert, G. W., & Stambaugh, R. F. (1987). Expected stock returns and volatility. *Journal of financial Economics*, *19*(1), 3-29.

Bekaert, G., & Harvey, C. R. (1995). Time□varying world market integration. *the Journal of Finance*, *50*(2), 403-444.

Hamao, Y., Masulis, R. W., & Ng, V. (1990). Correlations in price changes and volatility across international stock markets. *The review of financial studies*, *3*(2), 281-307.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: the role of local financial markets. *Journal of international economics*, *64*(1), 89-112.

Bekaert, G., & Harvey, C. R. (1997). Emerging equity market volatility. *Journal of Financial economics*, *43*(1), 29-77.

Nashier, T. (2015). Financial integration between BRICS and developed stock markets. *International Journal of Business and Management Invention*, *4*(1), 65-71.

Arshanapalli, B., & Doukas, J. (1993). International stock market linkages: Evidence from the pre-and post-October 1987 period. *Journal of Banking & Finance*, *17*(1), 193-208.

Mendoza, E. G., Quadrini, V., & Rios-Rull, J. V. (2009). Financial integration, financial development, and global imbalances. *Journal of Political economy*, *117*(3), 371-416.

Diebold, F. X., & Yilmaz, K. (2009). Measuring financial asset return and volatility spillovers, with application to global equity markets. *The Economic Journal*, *119*(534), 158-171.

Lane, P. R., & Milesi-Ferretti, G. M. (2003). International financial integration. *IMF Staff Papers*, *50*(1), 82-113.

Fratzscher, M. (2002). Financial market integration in Europe: on the effects of EMU on stock markets. *International Journal of Finance & Economics*, *7*(3), 165-193.

Chan, K. C., Karolyi, G. A., & Stulz, R. M. (1992). *Global financial markets and the risk premium on US equity* (No. w4074). National Bureau of Economic Research.

Benigno, P. (2009). Price stability with imperfect financial integration. *Journal of Money, credit and Banking*, *41*, 121-149.

Yang, J., Kolari, J. W., & Min, I. (2003). Stock market integration and financial crises: the case of Asia. *Applied Financial Economics*, *13*(7), 477-486.

Hansda, S. K., & Ray, P. (2003). Stock market integration and dually listed stocks: Indian ADR and Domestic Stock Prices. *Economic and Political Weekly*, 741-754.

Buckley, P. J., Forsans, N., & Munjal, S. (2014). Host-home country linkages and host-home country specific advantages as determinants of foreign acquisitions by Indian firms. In *The Multinational Enterprise and the Emergence of the Global Factory* (pp. 173-199). Palgrave Macmillan, London.

Cuadro-Sáez, L., Fratzscher, M., & Thimann, C. (2009). The transmission of emerging market shocks to global equity markets. *Journal of Empirical Finance*, *16*(1), 2-17.

Rey, H. (2015). *Dilemma not trilemma: the global financial cycle and monetary policy independence* (No. w21162). National Bureau of Economic Research.

Narayan, S. (2015). Are Asian stock market returns predictable?. *Emerging Markets Finance and Trade*, *51*(5), 867-878.

Forbes, K. J., & Chinn, M. D. (2004). A decomposition of global linkages in financial markets over time. *Review of economics and statistics*, *86*(3), 705-722.

Bekaert, G., Ehrmann, M., Fratzscher, M., & Mehl, A. (2014). The global crisis and equity market contagion. *The Journal of Finance*, *69*(6), 2597-2649.

Ahmed, S., Coulibaly, B., & Zlate, A. (2017). International financial spillovers to emerging market economies: How important are economic fundamentals?. *Journal of International Money and Finance*, *76*, 133-152.

Rehman, M. U., & Shah, S. M. A. (2016). Does Bilateral Market and Financial Integration Explains International Co-Movement Patterns1. *International Journal of Financial Studies*, *4*(2), 10.

Bekaert, G., & Harvey, C. R. (1997). Emerging equity market volatility. *Journal of Financial economics*, *43*(1), 29-77.

Ramchand, L., & Susmel, R. (1998). Volatility and cross correlation across major stock markets. *Journal of Empirical Finance*, *5*(4), 397-416.

Bekaert, G. (1995). Market integration and investment barriers in emerging equity markets. *The World Bank Economic Review*, *9*(1), 75-107.

Goodman, J. B., & Pauly, L. W. (1993). The obsolescence of capital controls?: economic management in an age of global markets. *World Politics*, *46*(1), 50-82.

Arshanapalli, B., & Doukas, J. (1993). International stock market linkages: Evidence from the pre-and post-October 1987 period. *Journal of Banking & Finance*, *17*(1), 193-208.

Bracker, K., Docking, D. S., & Koch, P. D. (1999). Economic determinants of evolution in international stock market integration. *Journal of Empirical Finance*, *6*(1), 1-27.

Jithendranathan, T., Nirmalanandan, T. R., & Tandon, K. (2000). Barriers to international investing and market segmentation: Evidence from Indian GDR market. *Pacific-Basin Finance Journal*, *8*(3-4), 399-417.

Goetzmann, W. N., Li, L., & Rouwenhorst, K. G. (2005). Long-term global market correlations. *Journal of Business*, *78*(1).

Agénor, P. R. (2001). *Benefits and costs of international financial integration: theory and facts*. The World Bank.

Nath, G. C., & Verma, S. (2003). Study of common stochastic trend and co-integration in the emerging markets: A case study of India, Singapore and Taiwan. *NSE Research Paper*, (72).

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: the role of local financial markets. *Journal of international economics*, *64*(1), 89-112.

Kim, S. J., Moshirian, F., & Wu, E. (2005). Dynamic stock market integration driven by the European Monetary Union: An empirical analysis. *Journal of Banking & Finance*, *29*(10), 2475-2502.

Hardouvelis, G. A., Malliaropulos, D., & Priestley, R. (2006). EMU and European stock market integration. *The Journal of Business*, *79*(1), 365-392.

Kose, M. A., Prasad, E. S., & Terrones, M. E. (2006). How do trade and financial integration affect the relationship between growth and volatility?. *Journal of international Economics*, *69*(1), 176-202.

Chen, H., Lobo, B. J., & Wong, W. K. (2006). Links between the Indian, US and Chinese stock markets. *National University of Singapore, Department of Economics, Working Paper*, *602*.

Chattopadhyay, S. K., & Behera, S. R. (2006, March). Financial integration for Indian stock market. In *Annual conference on money & finance held at IGIDR*.

Claessens, S., & Schmukler, S. L. (2007). *International financial integration through equity markets: Which firms from which countries go global?*. The World Bank.

García-Herrero, A., & Wooldridge, P. D. (2007). Global and regional financial integration: progress in emerging markets.

Guidolin, M., & Timmermann, A. (2008). International asset allocation under regime switching, skew, and kurtosis preferences. *The Review of Financial Studies*, *21*(2), 889-935.

Morana, C., & Beltratti, A. (2008). Comovements in international stock markets. *Journal of International Financial Markets, Institutions and Money*, *18*(1), 31-45.

Mendoza, E. G., Quadrini, V., & Rios-Rull, J. V. (2009). Financial integration, financial development, and global imbalances. *Journal of Political economy*, *117*(3), 371-416.

Diebold, F. X., & Yilmaz, K. (2009). Measuring financial asset return and volatility spillovers, with application to global equity markets. *The Economic Journal*, *119*(534), 158-171.

Benigno, P. (2009). Price stability with imperfect financial integration. *Journal of Money, credit and Banking*, *41*, 121-149.

Pukthuanthong, K., & Roll, R. (2009). Global market integration: An alternative measure and its application. *Journal of Financial Economics*, *94*(2), 214-232.

Mukhopadhyay, B. (2009). Financial market integration: The Indian experience. *Review of Market Integration*, *1*(1), 37-60.

Candelon, B., & Metiu, N. (2009). *Testing for extreme bulls and bears: a non-parametric perspective*. Working Paper, Maastricht University. Available at http://www. personeel. unimaas. nl/b. candelon.

Stiglitz, J. E. (2010). Risk and global economic architecture: Why full financial integration may be undesirable. *American Economic Review*, *100*(2), 388-92.

nath Mukherjee, K., & Mishra, R. K. (2010). Stock market integration and volatility spillover: India and its major Asian counterparts. *Research in International Business and Finance*, *24*(2), 235-251.

Singh, G. S. P. (2011). Chinese and Indian stock market linkages with developed stock markets. *Asian Journal of Finance & Accounting*, *2*(2).

Assidenou, K. E. (2011). Cointegration of major stock market indices during the 2008 global financial distress. *International Journal of Economics and Finance*, *3*(2), 212.

Poshakwale, S. S., & Thapa, C. (2010). Foreign investors and global integration of emerging Indian equity market. *Journal of Emerging Market Finance*, *9*(1), 1-24.

Aloui, R., Aïssa, M. S. B., & Nguyen, D. K. (2011). Global financial crisis, extreme interdependences, and contagion effects: The role of economic structure?. *Journal of Banking & Finance*, *35*(1), 130-141.

Beckmann, J., Belke, A., & Kühl, M. (2011). Global Integration of Central and Eastern European Financial Markets—The Role of Economic Sentiments. *Review of International Economics*, *19*(1), 137-157.

Joshi, P. (2011). Market integration and efficiency of Indian stock markets: A study of NSE. *NSE Paper*, *198*, 1-29.

Wasim, A., & Bandi, K. (2011). Identifying regime shifts in Indian stock market: A Markov switching approach.

Gupta, R., & Guidi, F. (2012). Cointegration relationship and time varying co-movements among Indian and Asian developed stock markets. *International Review of Financial Analysis*, *21*, 10-22.

Sakthivel, P., Bodkhe, N., & Kamaiah, B. (2012). Correlation and volatility transmission across international stock markets: a bivariate GARCH analysis. *International Journal of Economics and Finance*, *4*(3), 253.

Deora, R., & Nguyen, D. K. (2013). Time-scale comovement between the Indian and world stock markets. *The Journal of Applied Business Research*, *29*, 765-775.

Tiwari, A. K., Dar, A. B., Bhanja, N., & Shah, A. (2013). Stock market integration in Asian countries: Evidence from wavelet multiple correlations. *Journal of Economic Integration*, 441-456.

Basher, S. A., & Sadorsky, P. (2016). Hedging emerging market stock prices with oil, gold, VIX, and bonds: A comparison between DCC, ADCC and GO-GARCH. *Energy Economics*, *54*, 235-247.

Dimitriou, D., Kenourgios, D., & Simos, T. (2013). Global financial crisis and emerging stock market contagion: A multivariate FIAPARCH–DCC approach. *International Review of Financial Analysis*, *30*, 46-56.

Verma, S., & Mahajan, N. (2012). Stock return, volatility and the global financial meltdown: the behavior of Indian stock market. *International journal of arts and commerce*, *1*(7), 166-178.

Subha, M. V., & Nambi, S. T. (2013). A study on cointegration between indian and american stock markets. *Journal of contemporary research in management*, *5*(1).

Bekiros, S. D. (2014). Decoupling and the spillover effects of the US financial crisis: evidence from the BRIC markets. *International Review of Financial Analysis*, *33*, 58-69.

Dungey, M., & Gajurel, D. (2014). Equity market contagion during the global financial crisis: Evidence from the world's eight largest economies. *Economic Systems*, *38*(2), 161-177.

Olbrys, J., & Majewska, E. (2014). Direct identification of crisis periods on the CEE stock markets: The influence of the 2007 US subprime crisis. *Procedia Economics and Finance*, *14*, 461-470.

Chuang, W. I., Lee, B. S., & Wang, K. L. (2014). US and domestic market gains and Asian investors' overconfident trading behavior. *Financial Management*, *43*(1), 113-148.

Olbrys, J., & Majewska, E. (2014). The 2007-2009 financial crisis on emerging markets: quantitative identification of crisis in continent-based regions. *Chinese Business Review*, *13*(7), 411-426.

Sehgal, S., Gupta, P., & Deisting, F. (2014). Assessing Time-Varying Stock Market Integration in EMU for Normal and Crisis Periods.

Rey, H. (2015). *Dilemma not trilemma: the global financial cycle and monetary policy independence* (No. w21162). National Bureau of Economic Research.

Bai, M., & Qin, Y. (2015). Commonality in liquidity in emerging markets: Another supply-side explanation. *International Review of Economics & Finance*, *39*, 90-106.

Balcilar, M., Gupta, R., Nguyen, D. K., & Wohar, M. E. (2018). Causal effects of the United States and Japan on Pacific-Rim stock markets: nonparametric quantile causality approach. *Applied Economics*, 1-16.

Rajkumar, G. (2015). Linkages between india and three asean stock markets: a co-integration approach.

De Gregorio, J. (1999). Financial integration, financial development and economic growth. *Estudios de economía*, *26*(2), 137-161.

Mensi, W., Hammoudeh, S., Nguyen, D. K., & Kang, S. H. (2016). Global financial crisis and spillover effects among the US and BRICS stock markets. *International Review of Economics & Finance*, *42*, 257-276.

Wang, G. J., Xie, C., Jiang, Z. Q., & Stanley, H. E. (2016). Who are the net senders and recipients of volatility spillovers in China's financial markets?. *Finance research letters*, *18*, 255-262.

Hammoudeh, S., Kang, S. H., Mensi, W., & Nguyen, D. K. (2014). Dynamic global linkages of the BRICS stock markets with the US and Europe under external crisis shocks: Implications for portfolio risk forecasting.

Onakoya, A. B., & Seyingbo, V. A. (2017). Financial Markets Integration: Appraising the Developed and Emerging Markets Nexus. *International Journal of Economics and Financial Issues*, *7*(3), 613-624.

Appendices

s.no	year	Title of study	Author	Objective	Tools used	Finding of study
1	2017	Financial Market Integration : Appraising the developed and Emerging Market Nexus	onakoya ab, seyingbo va	To study integration among developed and developing economies recommended	E diebold and yilmaz methodological approach	Due to increase in level of Globalization increase in level of Emerging and developed market was found .
2	2017	International financial spillovers to emerging market economies: how important are economic fundamentals?	Shaghil ahmed, brahima coulibaly, andrei zlate	To determine the effect of Economic fundamentals on hytrogenous behaviour towards effects of financial market integration among emerging economies .	Cross sectional regression	Countries with more financial flows in past and greater exchange rate fluctuations suffered more during crisis period then others .
3	2016	Dynamic global linkages of the brics stock markets with the us and europe under external crisis	hammoudeh s, kang sh, mensi w,	Relationship between crisis and integration	Fiaparch model combined with the dynamic	Presence of important changes in the time-varying

		shocks: implications for portfolio risk forecasting	nguyen dk)	level	equicorrelation (deco-fiaparch),	linkages of the brics stock markets with the us and european ones. In particular, the average linkages have significantly been higher between 2007 and the first half of 2012 than the remaining part of the sample, and there is also evidence of structural change around the lehman brothers collapse
4	2016	Who are the net senders and recipients of volatility spill overs in china's financial markets?	Wang gj, xie c, jiang zq, stanley he	To study integration level within different segments of financial markets of china	Spillover index approach	China's stock , bond , forex , market are weakly integrated . Stock market is strongest sender of volatality to other markets . Followed by bond , forex and commodity being net recipients of volatality
5	2016	Global Financial Crisis and Spillover effects among the US and BRICS stock markets	W mensi, s hammoudeh, d k nguyen	To study volatility between us and brics market	The bivariate dcc-fiaparch model,	There has been change of volatility and correlation between us and brics market ovwer period of time
6	2016	Financial integration, financial developme nt and economic growth	Gregorio de j	To study relationship between financial integration and financial development and Financial development and economic growth	Regression	The benefit of financial integration can only be realized when domestic markets are developed

7	2016	Dilemma not trilemma: The global Financial Cycle and Monetary Policy Independence	rey h	To study impact of monetary policy on global financial market condition	conditional corelation	there exist impact of monetary policy of central countries on financial cycle moment globaly
8	2016	Global financial market and risk premium on us stock market	Chan k.c,andrewg, rent kamlyi , stulz m	To empirically analyse volatility spillover and cointegration during us financial crisis	The bivariate dcc-fiaparch model,	There is significant level of volatility spillover observed among us and brics countries and also integration increased during crisis period
9	2016	Does bilateral market and financial integration explains international co-movement patterns1	rehman mu, shah sma	To study factors responsible for integration	Error correction test	Comovement in indian and pakistan as developing economies is influenced by foreign portfolio equity ,market integration and inflation rate both in long run as well as short run .
10	2015	Linkages between india and three asean stock markets: a co-integration approach	Rajkumar gs	To study integration relation between indian market and other asean member countries	Granger-causality and co-integration test	There is short run influence of indian market on other asian market , no long run (cointegration was found

11	(2015)	Causal effects of the united states and japan on pacific-rim stock markets: nonparametric quantile causality approach	Balcılar m, gupta r, nguyen dk, wohar me	To examin causal Effect of us and japan on pacific rim region countries (study of causality between return and volatility)	Causality-in-quantile tests	There is presence of significant presence of causal relationship in return and volatility .
12	2015	Commonality in liquidity in emerging markets: another supply-side explanation	Bai m, qin y	To study Relationship between commoness of liquidity in markets and comovement in volatility of markets in case of emerging markets	Covariation analysis	Commonalityinliquidityisfoundtobepositivelyrelatedtoco-movementinvolatility, and negative related to development of markets.
13	2015	Financial integration between BRICS and developed stock markets	Nashier t	To study integration among BRICS nations	Correlation test and johansen's co integration test	There exist static level of integration during short as well as long run .
14	2015	Are Asian stock market returns	Narayan	To predict stock market moment	A two-state markov-	Bears and Returns of U.S market are important predictor of Asian market returns and bears of Asian

		predictable?	seema	of asian countries based on	switching mode Regression model	markets .
15	2014	Assessing time-varying stock market integration in EMU for normal and crisis periods	sehgal s, gupta p, deisting f	Examine financial integration process amongst 17 emu	Multiple methods	Higher level of development higher will be the level of integration
16	(2014)	The 2007-2009 financial crisis on emerging markets: quantitative identification of crisis in continent-based regions	Olbrys j, majewska e	To measure cointegration among selected countries from different regions	Correlation	Correlation among markets increased during crisis period as compared to pre and post crisis period
17	(2014)	U.S. And domestic market gains and asian investors' overconfident trading behavior	Chuang wi, lee bs, wang kl	To determine the impact of conditions in US and local market on investment behaviour of investors	correlations, Grangercausality tests.	it was seen that both U.S. and domestic market gains make Asian investors trade with more overconfidence in bull markets integration of Asian stock markets with U.S. stock markets after the Asian financial crisis in 1998 is an important reason for Asian investors' response to U.S. market gains by trading with overconfidence.
18	(2014)	Direct identification of crisis periods on the cee stock markets: the influence of the	Olbrys j, majewska e	To determine whether crisis period was common for all	correlation	There exist higher level of cointegration during crisis period

		2007 u.s. Subprime crisis		markets		
19	(2014)	Integration and Dynamic Linkages of the Indian Stock Market with BRIC-An Empirical Study	Das Gupta R	To investigate relationship in terms of Integration in short run and long run with special reference to India	pairwise granger causality tests, Johansen and juselius's and engle and granger's cointegration tests,	There is varying degree of integration among brics countries
20	(2014)	Equity market contagion during the global financial crisis: evidence from the world's eight largest economies	Dungey m, gajurel d	To study effect of integration during crisis period	Latent factor model	Developed and emerging economies show higher level of cointegration during crisis period
21	(2014)	Contagion, decoupling and the spillover effects of the us financial crisis: evidence 70from the bric markets	bekiros sd	Effect of financial integration linear or non linear	Vector autoregressions and various multivariate garch representations are adopted.	Effect of cointegration from US market to other markets has been observed
22	(2014)	The Global Crisis and Equity Market Contagion.	Bekaert g, ehrmann m, fratzscher m	To analyse the effect of domestic and external	Regression	Portfolio returns are highly influenced by domestic market conditions

				factors on portfolio returns		
23	.(2013)	A study on cointegration between indian and american stock markets	Dr subha mv mr. Nambi thirupparkadals	To study integration between indian stock market and us stock market	Correlation coefficient , engle granger test of cointegrations test	Indian stock market was found to be independent from Nasdaq and thr S&P 500 which confirmed that there was absence of cointegration between the Indian and American stock market during the period from January 1st 2000 to 31st December
24	(2013)	Stock return, volatility and the global financial meltdown: the behavior of indian stock market	Tiwari ak, dar ab, bhanja n, shah a	To determine the level of integration during crisis period	ARCH	During crisis period countries had significant level of integration
25	(2013)	Global financial crisis and emerging stock market contagion: a multivariate fiaparch–dcc approach	Dimitriou d, kenourgios d, simos t	To measure integration of brics with us under bull and bear phase	ARCH	Brics markets are more integrated during bull phase with us market as compared to bear phase
26	(2013)	Hedging emerging market stock prices with oil , gold ,VIX and Bonds : A comparison between DCC,ADCC and Go Garch	Basher sa, sadorsky p	To identify hedging options for hedging returns of emerging markets	Dcc, adc,go garch model , conditional correlation	Oil is best asset to hedge emerging markets

27	(2013)	Stock market integration in asian countries: evidence from wavelet multiple correlations	Verma s, mahajan n	To measure returns to foreign portfolio investors measured over short run vs long run	Correlation	Results showed that there are more potential gains of diversification at lower frequencies (longer time horizons) than higher frequencies (shorter time horizons) in Asian stock markets
28	(2013)	Time-scale comovement between the indian and world stock markets	Deora r, nguyen dk	To measure integration of indian stock market over varying time scale	GARCH	There exist time varying degree of Indian stock market with world market
29		Correlation and volatility transmission across international stock markets: a bivariate garch analysis	Sakthivel p, bodkhe n, kamaiah b	To empirically analyse volaltality and cointegration	Johansens cointegration and vector error correction model GARCH Model	There exist strong degree of cointegration and bi directional volatility spillover

30	2012	Cointegration relationship and time varying co-movements among Indian and Asian Developed Stock Markets	Gupta R r, guidi f	To measure integration among Indian and asian stock markets	Cointegration methodology and GARCH	There exist strong degree of cointegration and bi directional volatility spillover
31	2012	Host–home country linkages and host–home country specific advantages as determinants of foreign acquisitions by indian firms	Buckley pj, forsans n, munjal s	To study effect of host and home country factors on flow of foreign direct investment	Regression	Foreign investment is both influenced by host and home country factors
32	2011)	Identifying regime shifts in indian stock market: a markov switching approach	Wasim ,ahamad , bandi(	To identify bull and bear phase of indian stock market	A two state markov regime switching model	Indian stock market is most likely to remain bull as compared to bear phase
33	(2011)	Market integration and efficiency of indian stock markets: a study of nse	joshi p	To measure co-movemet of stock markets, to analyses speed of cointegration adjustment ,to measure effectiveness of regulatory measures undertaken by	Johansen and juselius multivariate cointegration approach , vector error correction models ,event 3methdology	Due to cointegration stock markets share common price trend , Indian stock market overreacts and underreacts to information with capacity to quick adjustment , Indian stock markets have become efficient at information processing

				sebi and nse		
34	2011	Comparative Study of Distribution of Indian Stock Market with other Asian Markets	Gupta N, agarwal v	To study of integration indian market with its regional counterparts	Correlation analysis	The results showed low level of integration giving foreign investors opportunity diversify
35	2011	Global Integration of Central and Eastern European Financial Markets -The role of Economic sentiments	Beckmann j, belke a, kühl m	To study effect of consumer sentiments and financial factors on pricing	VAR	It was found that financial factors have caused greater impact as compared to consumer sentiments factor on pricing
36	(2011)	Global financial crisis, extreme interdependences, and contagion effects: the role of economic structure?	Aloui r, aïssa msb, nguyen dk	To measure integration of brics countries with us market	garch	There exist strong integration of brics stock market with us market . Countries depended on commodity oriented market have stronger integrstion as compared to finished goods depended market
37	(2010	Foreign investors and global integration of emerging indian equity market	Poshakwale ss, thapa c	To study the impact of foreign investment on long run cointegration of emerging stock market with major equity market	Var analysis and johansen and juselius	With rapid increase of flow of foreign investment there has been significant increase in level of integration

38	(2011)	Cointegration of major stock market indices during the 2008 global financial distres	Assidenou ke	To measure cointegration of asian markets during crisis period of us sub prime crisis	Vector auto regression	During crisis period the cointegration of asian stock markets increased significantly
39	(2010	Chinese and indian stock market linkages with developed stock markets	Singh gsp)	To measure integration of chinese and indian stock market with developed markts	Correlation , granger causality and cointigration test using error correction model	Chinese and india stock markets are integrated with all four major stock markets i.e us ,uk, japan and honkong
40	(2010	Stock market integration and volatility spillover: india and its major asian counterparts	Mukherjee nath k, mishra rk	To measure volatility and return spillover of indian stock market with 12 other asian developed and developing countries	Garch	India has different degree of correlation in terms of returns and volatility with asian countries
41	(2010)	Risk and Global Economic Architecture : Why full Financial Integration may be Undesirable	stiglitz je	To determine appropriate level of integration	Canonical Model.	Autarky level of integration is appropriate , full level of integration is not preferred

42	(2009)	Testing for extreme bulls and bears : A non-parametric perspectivee	Candelon b, metiu n	To do analysis of extreme bull and bear behavior that occurred after 1973 on stock markets of 9 OECD countries	Non parametric approach	It was found that effect of crisis was heterogenous across the countries .Bears of Subprime exhibit extreme level of depth and convexity characterstics for Netherland , Austria and United Kingdome and US
43	(2009)	Financial market integration: the indian experience for methodology	Mukhopadhya y b	To study effect of development and sectoral condition on financial market integration	correlation	Countries with same development level are more integrate . Service sector is the highest integrate market at sectoral levle
44	(2009)	Global market integration an alternative measures and its applications	Pukthuanthon g k, roll r	To measure integration of financial markets	Multi factor model	Integration has grown faster in some countries than in others. Members of the european Community, plus a few others such as south korea, have experienced the largest increases in Measured integration. In contrast, several countries have gone in the opposite direction, toward Less integration; these include such troubled nations as bangladesh, nigeria, pakistan, sri lanka, And zimbabwe.
45	2009	Price stability with imperfect financial integration	P benigno	To study the impact of common	Two -country general equilibrium	With non-zero holdings of net foreign assets, there exist non-negligible gains from following a coordinated monetary policy instead of a price-

				monetary policy when financial markets are incomplete	model	stability policy.
46	2009	Measuring Financial Asset Returns and Volatility Spillover ,With application to Global Equity Market	Mendoza, e. G., quadrini, v., & rios-rull	To study behavior of return and volatility under bull and bear phase	VAR	Returns show gradual response in bull phase as compared to volatility which show burst response
47	2009	Financial integration , financial development and global imbalace	Mendoza, e. G., quadrini, v., & rios-rull(	To study the impact of development level on integration	General Equilibrium model	Integration among countries at similar level of development have stronger integration. Integration among countries at different level causes imbalance
48	2009)	The transmission of emerging Market shocks to Global Equity Markets	Cuadro-sáez l, fratzscher m, thimann c	To determine the impact of EME on developed economies	OLS estimator with panel-corrected standard errors (PCSE)	There is presence of heterogenous impact of EME on developed economies .
49	(2008	Comovements in international stock markets	morana , beltratti a)	To study relationship between integration level and comovements	Principal component analysis	Higher the level of integration higher will be the comovements in prices, returns, volatility and correlation

50	2008	International asset allocation under regime switching, skew, and kurtosis preferences	M guidolin, a timmermann	To investigate relationship between portfolio diversification and higher international bear	CAPM	Us investors hold diversified portfolio
51	2007)	Global and regional financial integration: progress in emerging markets	A garcia-herrero,(	To study factors responsible for integration of financial markets	Paper based on review	Some countries closely located in a region more integrate as compared to far distanced markets
52	2007	International Financial Integration through equity markets : which firms from which countries go global?	Claessens s, schmukler sl	Identify factors responsible for internationalizatio n of firms and countries	Random-effects (linear) panel and tobit models	It was found that firms coming from more liberal , sound and strong market setting internationalize
53	(2006)	Financial integration for indian stock market	Chattopadhya y sk, behera sr	To determine integration of indian stock market with other markets	Granger causality test Cointegration test	Indian stock market is not influenced by other markets. Some short term impulse responses were observed
54	(2006	Links between the indian, us and chinese stock markets	Chen h, lobo bj, wong wk)	To determine relationship	Fractionally integrated	Us market plays dominating role among integrate markets

				between india , us and china in integrated financial system	vector error correction model	
55	(2006)	How do trade and financial integration affect the relationship between growth and volatility?	Kose ma, prasad es, terrones me	To study impact of trade and financial integration on relationship between growth and volatility	Regression	Trade and financial integration have significantly reduced negative relationship between growth and volatility
56	(2006)	Emu and european stock market integration	Hardouvelis ga, malliaropulos d, priestley r	To examine the influence of the european monetary union (emu) on the dynamic process of stock market integration	Asset pricing model	Adoption of common currency or formulation eu lead to increased level of integration ,external factors became more influential then domestic factors
57	2005	Dynamic stock market integration driven by the european monetary union: an empirical analysis	Sj kim, f moshirian, e wu	To examine the influence of the european monetary union (emu) on the dynamic process of stock market	Bivariate egarch framework	Convergence of Macro factors due to introduction of EMU and level of development lead to increase in regional and global stock market integration.

				integration		
58	(2004)	FDI and economic growth: the role of local financial markets	Alfaro,l chanda a, kalemli-ozcan s	To study impact of local financial condition on FDI investments in India	Regression	It was found local financial conditions in India significantly influenced the FDI flows in India .
59	(2004)	A decomposition of Global Linkages in Financial Markets over time	Forbes KJ, Chinn MD	To comparatively analyse the impact of global sectoral and cross country factors on integration of financial market	Factor model	Sectoral and cross country factors are found to be important determinant of Bond and Stock market returns Direct trade are found to be most important factor influencing the moments of largest stock markets in the world
60	(2003)	Study of common Stochastic trend and co-integration in the Emerging Markets : A study of India, Singapore and Taiwan	nath gc, verma s	To examine stock market indices of India Singapore and Taiwan, determine their co-integration	Bi-variate and multivariate cointegration analysis	No long run equilibrium was found due to absence of co-integration among the markets . Only for some years mild causality was found , rest for most of the time no integration was found between them
61	2003	Benefits and costs of international financial integration	Pr agénor	To Analysis of benefits and costs of financial	Theoretical paper	Net benefit is given by financial market integration

		: theory and facts		market integration		
62	2003	Stock market integration and dually listed stocks: indian adr and domestic stock prices	Hansda sk, ray p	To study the effect of Effect of price change on same securties lsited on two stcok exchanges	Var	If shares listed on indian stock exchange and adr listed on nasdaq then ,price change in nasdaq will affect price of such share on india stock market
63	(2003)	Stock market integration and financial crises: the case of asia T	Yang j, kolari jw, min i	To analysis of level of stock market integration before during and after stock market crisis	Var	, results show that both short run and long run integration relationship strengthened during crisis period among asian countries
64	(2003)	International financial integration	lane (pr) , milesi-ferretti gm	To determine the relationship between financial market integration and growth H and also to		Integration of financial markets boosts growth even when controlling for particular economic, financial, institutional, and policy characteristics.

				assess whether this relationship depends on the level of economic development, financial development, legal system development, government corruption, and macroeconomic policies		
65	(2001)	Long-term global market correlations	Goetzmann wn, li l, rouwenhorst kg	To study corelation ,comovement change over period of time	Corelation	The structure of global correlations shifts considerably through time. Corelation among markets vary affected by integration,diversification benefits of global investing not constant
66	(2001)	Financial Market Integration in Europe : The effect of EMU on stock markets	Fratzcher M	To determine factors responsible for integration of emu markets	Trivariate garch model	It was found that reduced exchange rate uncertainty as well as monetary policy convergence of interest rates and inflation rates have been the central driving force behind the financial integration process in europe
67	(2000)	Barriers to international investing and market segmentation:	jithendranatha n t,	To study effect of integration on	Market segmentation	. Prices of gdrs is influenced by international factors of the market in which they are listed as well as domestic factors of home country . While underlying

		evidence from indian gdr market	nirmalanandan tr	price of gdr	model	shares only influenced by domestic factors only
68	(1999)	Economic determinants of evolution in intern Ational stock market integration	Bracker k, docking ds, koch pd	To study relationship between stock market commovements and macro factors	Rwgression	High degree of cointegration and Macro factors affect cointegration level
69	(1998)	Volatility and cross correlation across major stock markets	Ramchand l , susmel r	To study relationship between cointegration and volatility	Swarch	Higher the level of integration higher will be the level of volatility
70	(1997)	Emerging equity market volatility	Bekaert g, harvey cr	To study impact of financial reforms on integration and volatility	Arch	Liberalization lead to increased level of financial integration but did not affect th volatility
71	1995	Time□varying world market integration	Bekaert g, harvey cr	To measure of financial market integration	Arch	There exist different degrees of integration among the countries it's a time varying concept.

72	(1995)	Market integration and investment Barriers in Emerging Equity Marekts	Bekaert G	To measure integration of financial markets	Vector auto regression	Firstly global factors account for a small fraction of the time variation in expected returns in most markets, and global predictability has declined over time. Second, the emerging markets exhibit differing degrees of market integration with the u.s. Market, and the differences are not necessarily associated with direct barriers to investment
73	1993	The obsolescence of capital controls?: economic management in an age of global markets	Goodm jb an, lw pauly	To study Factor responsible for effect of integrations among economies	Conceptual paper	Capital control measure affects the inflow and outflow of funds ,leading to effect on financial market integration
74	(1993)	International stock market linkages: evidence from the pre-and post-october 1987 period	Arshanapalli b, doukas j	To measure the linkages and interaction among the major stock markets of the world	Conditional regime switching model	There exist increased level of integration post 1980 period
75	(1992)	Global financial market and risk premium on us stock market	stulz rm	To determine the effect of domestic or international conditions on us stock markets	Bivariate garch-in-mean	Us market risk is more influenced by global conditions rather than local conditions

				volatility		
76	1990	Correlations in price changes and volatility across international stock markets	Hamao y, masulis rw, Victor ng	To determine relationship between price and price volatility	ARCH	Price volatility from new york to tokyo , london to tokyo and new york to london is found but no evidence of price volatility spill over in other direction .
77	1987	Expected stock returns and volatility	Kr french kr, schwert gw, stambaugh rf	To study relationship between return and volatality	Arima and GARCH model	Positive relationship between expected stock market return and expected stock market volatility